2.0 ALTERNATIVES

2.1 DEVELOPMENT OF ALTERNATIVES

SR-22 is the only Orange County freeway that does not have an HOV facility. The absence of HOV lanes on the SR-22 freeway is the missing link in the Orange County HOV system. The proposed project would potentially provide for HOV system continuity and connectivity (depending on the selected alternative), tying to I-605, I-405, I-5, and SR-55, thereby helping to improve congestion locally. The traveling public has little incentive or opportunity to switch from single-occupancy vehicles to carpooling or transit as there are no dedicated facilities for this purpose. Depending on the preferred alternative, improving the availability of travel choices under study could help "close the gap" in the Orange County High Occupancy Vehicle (HOV) system, thereby indirectly relieving traffic congestion in the region.

To develop a set of conceptual alternatives to improve mobility and safety on SR-22, an MIS was developed for the SR-22/West Orange County Connection project, leading to the final set of four conceptual alternatives that are evaluated in this DEIR/EIS.

2.1.1 Alternatives Formulation Process

The formulation of alternatives for this analysis involved close coordination with public agencies and the general public over a two-year period. The MIS process was initiated in July 1997 to evaluate the different mode choices to meet the mobility needs of the study area. The MIS process followed was that prescribed by the federal government.

The MIS Steering Committee was formed in July 1997 as a forum for affected local agencies to provide input to the study. The study's base information, developed under Steering Committee guidance, includes the following:

- Transportation need/problem statement
- Study goals
- Study objectives to meet the goals
- An initial list of conceptual alternatives (provided in Section 2.1.2)
- A series of evaluation criteria
- A public involvement plan
- Resource agency notification and coordination letters

A series of three public workshops was held in December 1997, along with professionally conducted opinion polls to obtain public input. Following the workshops, a summary of public input was presented to the OCTA Board of Directors in January 1998, and the Board approved further evaluation of improvements in the study area.

The next stage was the screening of alternatives against the evaluation criteria. The results of that analysis are presented in detail in Section 4.0 of the MIS report. The results of the *MIS Evaluation Report* were presented to the public at the scoping meeting described below, to the Steering Committee, and to the SCAG's MIS Peer Review Group.

Additional public input was obtained during the scoping process pursuant to the California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA). The Notice of Initiation of Studies (NOIS) was sent out on May 1, 1998; the Notice of Intent (NOI) was published in the *Federal Register* on June 3, 1998, and the Notice of Preparation (NOP) was released May 29, 1998. Written responses were received to these notifications. In addition, an open house/public scoping meeting was held on June 23, 1998 to obtain public and agency input. Two elected officials meetings were held in September 1997 and June 1998 as discussion sessions for elected officials to ask questions and express concerns about the study.

On August 10, 1998, the OCTA Board met to review the process and consider the next actions in the environmental compliance and preliminary engineering for the study alternatives. The Board agreed to proceed with preparation of the draft environmental document and preliminary engineering. On November 9, 1998, the OCTA Board recommended one of the MIS alternatives to be carried forward as the "build alternative" for further study, along with the No Build Alternative and the TSM/Expanded Bus Service Alternative.

In January 2000, during technical analyses for this DEIR/EIS, the identification of potential environmental impacts associated with the Full Build Alternative (then known as the Build Alternative) led to the decision to study an additional build alternative in an attempt to avoid or minimize certain impacts, thereby bringing the total number of alternatives for the DEIR/EIS phase of project analysis to four: the No Build Alternative, the TSM/Expanded Bus Service Alternative, the Full Build Alternative, and the Reduced Build Alternative.

Section 2.1.2 summarizes the full range of transportation alternatives that were developed very early in the project analysis (see MIS Evaluation Report for complete details), including the key steps used to narrow and refine the full range of transportation alternatives to the final four. Section 2.2 describes in detail the four alternatives analyzed in this DEIR/EIS. Section 2.3 describes those transportation alternatives that were dropped from further consideration upon completion of the MIS phase.

On February 12, 2001, SCAG released a Letter of Completion for the SR-22 West Orange County Connection Final MIS. According to the SCAG letter, "the range of alternatives studied in the SR-22 West Orange County Connection Final MIS Evaluation Report is sufficient to meet the requirements of the regionally significant transportation investments study (RSTIS) guidelines. Adequate public involvement was utilized in the planning process through workshops and public hearings. Moreover, public agency involvement was facilitated numerous meetings and RSTIS Peer Review Group Meetings."

2.1.2 Description of Conceptual Alternatives

The following provides a brief synopsis of the full range of transportation alternatives that were developed during the planning stages of the project to address the purpose and need for transportation improvements in the SR-22 corridor study area. These transportation improvements, including the technical evaluation conducted as part of the alternatives development and refinement process, are described in detail in the SR-22/West Orange County Connection MIS Evaluation Report.

Through both technical analysis and public input, the features of the conceptual alternatives have continued to evolve. This is typical of the planning and early environmental phases of project development as the transportation benefits, costs, environmental impacts, and policy implications associated with the various design concepts are evaluated and understood.

A. INITIAL SET OF CONCEPTUAL ALTERNATIVES

The MIS Steering Committee developed an initial set of ten conceptual alternatives at the beginning of the MIS evaluation process. This initial set of conceptual alternatives included:

- Initial Alternative 1: No Build
- Initial Alternative 2: TSM/Expanded Bus Service
- Initial Alternative 3: General-Purpose Lane on SR-22
- Initial Alternative 4: Alternative 3, plus former Pacific Electric right-of-way (as general-purpose arterial)
- Initial Alternative 5: Rail
- Initial Alternative 6: HOV Lane on SR-22 (as reflected in the SCAG 1998 RTP)
- Initial Alternative 7: Alternative 6, plus former Pacific Electric right-of-way (as HOV/high-occupancy/toll [HOT] arterial)
- Initial Alternative 8: Alternative 7, plus SR-22/ I-405 HOV Connector
- Initial Alternative 9: Alternative 8, plus Four-Lane HOV on I-405 between SR-22 and I-605, with I-405/I-605 HOV Connector

- Initial Alternative 10: Alternative 9, plus SR-22/SR-55 HOV Connector

B. REFINED SET OF CONCEPTUAL ALTERNATIVES

Upon further consideration, the Steering Committee determined that the initial set of ten conceptual alternatives were not sufficiently distinct from each other. For example, Alternatives 6 through 10 were considered to be variations of the same basic alternative. They were combined to form one alternative for analysis. The Steering Committee revised the conceptual alternatives list to incorporate all of the individual components into the following list of six refined conceptual alternatives. These refined alternatives included:

- Refined Alternative 1: No Build
- Refined Alternative 2: TSM/Expanded Bus Service
- Refined Alternative 3: Fixed Guideway
- Refined Alternative 4: General-Purpose Lanes (consisting of sub-alternatives 4A and 4B)
- Refined Alternative 5: HOV Lanes on SR-22 (as reflected in the SCAG 1998 RTP)
- Refined Alternative 6: HOV Lanes Full System (consisting of sub-alternatives 6A, 6B, and 6C)

C. FINAL SET OF CONCEPTUAL ALTERNATIVES

The six refined alternatives were analyzed in detail during the technical evaluation conducted for the MIS Evaluation Report. This technical evaluation, along with public input and policy considerations, resulted in OCTA Board approval of a "final" set of three conceptual alternatives for study in this DEIR/EIS. These alternatives incorporated the following transportation elements: Highway, HOV, Bus, and Advanced Transportation Systems (ATS). The three alternatives carried forward were as follows:

- No Build Alternative
- TSM/Expanded Bus Service Alternative
- Build Alternative

D. ADDITIONAL ALTERNATIVE

Early in the DEIR/EIS documentation process, during the environmental analyses of the final set of three conceptual alternatives, it became apparent that the environmental impacts that would result from the "build alternative" would be more substantial than expected. Thus, another smaller-scale build alternative that could potentially result in fewer environmental impacts was identified and added to the project analysis.

The "build" alternative was relabeled the Full Build Alternative when the Reduced Build Alternative was added in January 2000. The four alternatives carried forward for evaluation in the DEIR/EIS are:

- No Build Alternative
- TSM/Expanded Bus Service Alternative
- Full Build Alternative
- Reduced Build Alternative

These four alternatives are described in Section 2.2. The final selection of an alternative will not be made until the FEIR/EIS stage, after consideration of impacts and the public comment period.

2.2 ALTERNATIVES UNDER CONSIDERATION

Three action alternatives and a no build alternative have been identified for study in the DEIR/EIS and are described below.

2.2.1 No Build Alternative

The No Build Alternative represents future baseline conditions in the year 2020 and provides a baseline scenario for comparison with other alternatives. The No Build Alternative encompasses only improvements to the transportation network that have already been approved and funded. No capital improvements for SR-22 are included under this alternative. The No Build Alternative incorporates all of the elements of the OCTA 1998 *FastForward* Long-Range Transportation Plan (FFTP) Baseline Scenario that are outlined in Table 2.2-1. The FFTP Baseline Scenario also includes the 1995 Combined Transportation Funding Program (CTFP) data. In addition, the No Build Alternative includes all city or developer projects not in the 1995 CTFP that have been approved and funded.[1] It is important to note that under the no build alternative, traffic is projected to worsen, and driving conditions would ultimately deteriorate to a point where the use of the parallel alternate arterials would increase proportionately. Consequently, driving conditions are expected to worsen as commuters shift from utilizing the SR-22 to the local arterials during peak periods. Under the No Build Alternative, one-half of the SR-22 corridor would operate at Level of Service (LOS) F (Refer to Transportation and Circulation Section 3.7 & 4.7).

Table 2.2-1
OCTA's *FASTFORWARD* LONG-RANGE TRANSPORTATION PLAN
BASELINE SCENARIO

Highways/ Streets	Freeway widening	• I-5 north through Anaheim from SR-22 to SR-91 • SR-55 from SR-22 to SR-91
	Improvements	• Various improvements at junction of I-405 and SR-73 • Eastern and Foothill Transportation Corridors (general-purpose lanes) • "Gateway" program using markers denoting county borders • State Route 133 (SR-133) realignment from I-405 to El Toro Road • Grade separation at Imperial Hwy. for Orangethorpe Rail Corridor to reduce delays • Complete existing bikeway projects
	Measure M	• Turnback funding for city street improvements to year 2011 • Competitive street program of projects
	Smart streets	• Beach Boulevard • Imperial Highway • Katella Avenue • Moulton Parkway
HOV	Carpool lanes	• Added to I-5 north from SR-22 to Los Angeles County line • Added to SR-91 from SR-57 to Los Angeles County line
	Carpool lane connections	• I-5/SR-91 • SR-91/SR-57 • I-405/SR-55

[1] The FFTP and CTFP documents are available at OCTA.

Table 2.2-1 (continue)
OCTA's *FASTFORWARD* LONG-RANGE TRANSPORTATION PLAN
BASELINE SCENARIO

Bus	Bus service Additional	• Increase service to 1.90 million annual vehicle service hours by year 2020 • Purchase clean fuel transit buses and vans • Add articulated buses • Support regional rideshare program for two years (carpool matching, marketing, etc.) • Build a fourth maintenance base • Implement new communication systems for buses
	Accessibility	• Meet ADA mandates for complementary paratransit service • Provide accessible bus stops for persons with disabilities
Rail Transit	Rail transit	• Design 45-kilometer (28-mile) urban rail from Fullerton to Irvine • Operate Metrolink: Orange County (to Los Angeles) Line and Inland Empire-Orange County Line • Double Metrolink track parallel to Lincoln Avenue (in Santa Ana & Orange) • Construct Metrolink rail stations in Buena Park, Tustin, and Laguna Niguel/Mission Viejo
Advanced Transportation Systems	ATS	• Traveler information at kiosks located throughout the county • Automatic vehicle locators for buses using Global Positioning Satellites (GPS) • Public/private advanced transportation technology partnerships

Also included in the No Build Alternative are all of the elements of the No Build and TSM alternatives defined in OCTA's *The Corridor Major Investment Study Final Evaluation Report*, which was adopted by the OCTA Board on June 9, 1997.[2] Descriptions of these elements are contained in the *MIS Evaluation Report*. The Corridor MIS No Build Alternative represents the existing highway, HOV, bus, fixed guideway, and ATS systems plus all transportation improvements programmed to be implemented by 2020, as outlined in OCTA's FFTP Baseline Scenario. The Corridor MIS TSM alternative represents implementation of lower cost capital improvements, such as increased bus service with associated arterial improvements.

2.2.2 TSM/Expanded Bus Service Alternative

The TSM/Expanded Bus Service Alternative includes all of the improvements outlined in the No Build Alternative, such as OCTA's FFTP Baseline Scenario and The Corridor MIS No Build and TSM Alternatives. In conjunction with these improvements, the TSM/Expanded Bus Service Alternative incorporates additional TSM strategies in the SR-22 corridor. The TSM/Expanded Bus Service Alternative would include various improvements such as increased capacity and speed on Garden Grove Boulevard, Trask Avenue, and Westminster Boulevard/17th Street within the existing curbs by such methods as removing parking and widening lanes, reduced headway on buses in study area and two new routes, resulting in addition of approximately 50 buses during peak periods and 40 buses during the midday period, and signal synchronization/controller upgrading. Adding bus service on both the freeway and adjacent arterials may not solve the congestion problem since these facilities do not have capacity for dedicated bus lanes, particularly on SR-22. Currently, SR-22 experiences congestion problems during AM/PM peak periods. The TSM/Expanded Bus Service Alternative strategies are primarily operational and are listed in Table 2.2-2.

The TSM/Expanded Bus Service Alternative does not include any capital improvements to SR-22.

[2] Available at OCTA.

Table 2.2-2
TSM/EXPANDED BUS SERVICE ALTERNATIVE ELEMENTS

All improvements included in the No Build Alternative, plus:	
Highway	• Increased capacity and speed on Garden Grove Boulevard, Trask Avenue, and Westminster Boulevard/17th Street within the existing curbs by such methods as removing parking and widening lanes • Deployment of trailblazing signage
Bus*	• Reduced headway on buses in study area and two new routes, resulting in addition of approximately 50 buses during peak periods and 40 buses during the midday period • Extension of three bus routes into Long Beach • Implementation of a fleet management system • Development of a transit intersection priority system
ATS	• Signal synchronization/controller upgrading • Automated Response Plan • Use of Highway Advisory Radio • Installation of Changeable Message Signs

* The transit operating plans were established as part of the definition of alternatives during the MIS phase of the SR-22/West Orange County Connection project.

2.2.3 Full Build Alternative

The Full Build Alternative, the "build" alternative identified by the OCTA Board on November 9, 1998, includes all of the elements contained in the No Build and TSM/Expanded Bus Service Alternatives, as well as specific elements that address HOV system connectivity. This alternative would provide HOV lanes on SR-22, thereby completing the countywide HOV system, fulfilling an important transportation goal. The SR-22 HOV connectors were added in September 1997 with the expansion of the project, which included the West Orange County Connection. This element was incorporated in response to public outreach, which identified completion of the HOV system as a high priority. In particular, HOV connectors were perceived as important, especially in regards to the safety and efficiency of the system. The HOV connectors allow the system to accommodate long distance travel for carpools and buses, while enabling the smooth flow of vehicles between freeways and avoiding chokepoints at major interchanges. The Full Build Alternative's route was divided into six segments for analysis purposes. This was done to enable separate consideration of the impacts of each segment and facilitate subsequent planning and implementation decisions. These segments are as follows:

1. I-405/I-605 Connector – Katella Avenue south to Seal Beach Boulevard a distance of 2.7 kilometers (1.7 miles)
2. I-405/SR-22 Connector – Seal Beach Boulevard east to Valley View Street, a distance of 3.5 kilometers (2.2 miles)
3. SR-22 Mainline – Valley View Street east to Glassell Street, including The City Drive improvements, a distance of 17.9 kilometers (11.1 miles)
4. I-5/SR-22 Connector – SR-22 and The City Drive to I-5 and Broadway, a distance of 2.3 kilometers (1.4 miles)
5. SR-22/SR-55 Connector – SR-22 and Glassell Street to SR-55 and Chapman Avenue to the north and Fairhaven Street to the south, a distance of 3.9 kilometers (2.4 miles)
6. Pacific Electric Arterial – Taft Avenue at SR-22, southeast to where it joins Santa Ana Boulevard at Raitt Street, a distance of 5.1 kilometers (3.2 miles)

In addition to the improvements outlined in No Build and TSM/Expanded Bus Service Alternatives, the Full Build Alternative includes the elements listed in Table 2.2-3.

Table 2.2-3

FULL BUILD ALTERNATIVE ELEMENTS

All improvements included in the No Build and TSM/Expanded Bus Service Alternatives, plus:	
Highway	• A general-purpose arterial roadway on the former Pacific Electric right-of-way south of SR-22 leading to central Santa Ana via Santa Ana Boulevard and Civic Center Drive; this alternative includes a temporary landscaped median, which will be reserved for future transit improvements • Direct connector ramps between SR-22 and the new arterial on the former Pacific Electric right-of-way • Continuous auxiliary lanes from Beach Boulevard to I-5 • Interchange improvements at Beach Boulevard and Brookhurst Street • A collector/distributor road along the eastbound SR-22 at the SR-22/I-5/SR-57 confluence • Improvements at The City Drive including a new connector from southbound SR-57 to westbound SR-22 • Replacement of portions (or all) of several general-purpose lane connectors in the SR-22/I-405/I-605 interchange, the SR-22/I-405 interchange, the I-5/SR-22/SR-57 interchange, and the SR-22/SR-55 interchange
HOV	• An assumed HOV occupancy requirement of three or more persons per vehicle by study planning year 2020* • An additional lane for HOVs on SR-22 in each direction from I-405 to SR-55 • An additional lane for HOVs on I-405 in each direction from I-605 to SR-22 • HOV direct connector ramps between: – Southbound I-605 to southbound I-405 – Northbound I-405 to northbound I-605 – Southbound I-405 to eastbound SR-22 – Westbound SR-22 to northbound I-405 – Eastbound SR-22 to southbound I-5 – Northbound I-5 to westbound SR-22 – Eastbound SR-22 to northbound SR-55 – Southbound SR-55 to westbound SR-22
Bus	• Faster express bus service through bus use of the proposed HOV lanes on SR-22 for routes from Tustin, Orange, Santa Ana, and Garden Grove to Long Beach

*Note: For study purposes, the HOV occupancy requirement is assumed to be applicable to all freeway HOV lanes in Orange County by Year 2020.

The Full Build Alternative also includes the following design improvements to improve the operational characteristics of the facility in certain locations that currently create bottlenecks (choke-points) for motorists:

- Continuous auxiliary lanes from Beach Boulevard to I-5
- Interchange improvements at Beach Boulevard and Brookhurst Street
- A collector/distributor road along the eastbound SR-22 at the SR-22/I-5/SR-57 confluence

Figure 2.2-1 shows the proposed Full Build Alternative route map and locations of the proposed capital improvements. Figure 2.2-2 (A and B) illustrates typical cross sections for the various improvements.

Under the Full Build Alternative, the freeways within the SR-22/West Orange County Connection project would be improved to full geometric design standards with the exception of a few advisory design standards, such as interchange spacing, shoulder widths, and median widths, that must be approved by Caltrans. This DEIR/EIS includes analysis of the Full Build Alternative as illustrated on the *Preliminary Engineering Plans, State Route 22, for Project Report and Environmental Document, in Orange County, From Interstate 605 to State Route 55 (Project Plans)* (Parsons Brinckerhoff, December 2000).[3]

[3] Available at OCTA.

(Note: If the Full Build Alternative is selected as the preferred alternative after the DEIR/EIS public review period, various alignment refinements included in the Reduced Build Alternative, discussed below, may be considered for implementation as part of the Full Build Alternative.)

The planning horizon for the Full Build Alternative is 2020. For the purposes of the traffic analysis the HOV requirement was assumed to be three or more persons per vehicle (3+) in the Year 2020. This assumption is consistent with other future planning efforts and was based on the analysis of travel forecasts. It is predicted that Orange County's HOV lanes would be congested during peak periods in 2020 even with an average occupancy requirement of two or more persons per vehicle (2+). Consequently, travel demand forecasts conducted for the SR-22 West Orange County Connection alternatives assume that the full Orange County HOV network would be operating under a 3+ occupancy requirement. It is important to note, however, that the policy decision to change the HOV vehicle occupancy requirement from 2+ to 3+ has not been made. The current vehicle occupancy requirement for HOV lanes in Orange County is 2+. For the Full Build Alternative, it is anticipated that HOV lanes on SR-22 would open and operate at a 2+ occupancy requirement until such time that a policy decision is made to change the HOV network from 2+ to 3+.

2.2.4 Reduced Build Alternative

The Reduced Build Alternative includes all of the elements contained in the No Build and TSM/Expanded Bus Service Alternatives, as well as some of the elements of the Full Build Alternative. The Reduced Build Alternative's route is divided into three segments for analysis purposes:

1. I-405/I-605 Connector – Katella Avenue south to Seal Beach Boulevard a distance of 2.7 kilometers (1.7 miles)
2. I-405/SR-22 Connector – Seal Beach Boulevard east to Valley View Street, a distance of 3.5 kilometers (2.2 miles)
3. SR-22 Mainline – Valley View Street east to approximately Glassell Street, including The City Drive improvements, a distance of 17.3 kilometers (10.7 miles)

The Reduced Build Alternative was created by eliminating certain elements of the Full Build Alternative from the project design. The three major elements not included in the Reduced Build Alternative are the new arterial in the former Pacific Electric right-of-way, the HOV connectors between SR-22 and I-5, and the HOV connectors between SR-22 and SR-55. Thus, the Reduced Build Alternative includes the elements listed in Table 2.2-4.

The Reduced Build Alternative also includes the following design improvements to improve the operational characteristics of the facility in certain locations that currently create bottlenecks (choke-points) for motorists:

- Continuous auxiliary lanes from Beach Boulevard to I-5
- Interchange improvements at Beach Boulevard and Brookhurst Street
- A collector/distributor road along the eastbound SR-22 at the SR-22/I-5/SR-57 confluence

Figure 2.2-3 shows the proposed Reduced Build Alternative route map and locations of the proposed capital improvements. The Reduced Build Alternative cross sections (i.e., lane, median, shoulder, and buffer widths) are illustrated on Figure 2.2-4 (A and B). Under the Reduced Build Alternative, the freeways within the SR-22/West Orange County Connection project would be improved to full geometric design standards with the exception of a few advisory design standards, such as interchange spacing, shoulder widths, and median widths, that must be approved by Caltrans. In an effort to avoid or reduce

Figure 2.2-1
Full Build Alternative Route Map

Figure 2.2-2A
Full Build Alternative Cross Sections

Figure 2.2-2B
Full Build Alternative Cross Sections

impacts related to right-of-way acquisitions, some of the Reduced Build Alternative alignment was shifted to one side or the other of the centerline as indicated on Figure 2.2-3. This DEIR/EIS includes analysis of the Reduced Build Alternative as illustrated on the *Project Plans* (Parsons Brinckerhoff, December 2000).[4]

[4] Available at OCTA.

Table 2.2-4
REDUCED BUILD ALTERNATIVE ELEMENTS

• **All improvements included in the No Build and TSM/Expanded Bus Service Alternatives, plus:**	
Highway	• Continuous auxiliary lanes from Beach Boulevard to I-5 • Interchange improvements at Beach Boulevard and Brookhurst Street • A collector/distributor road along the eastbound SR-22 at the SR-22/I-5/SR-57 confluence • Improvements at The City Drive including a new connector from southbound SR-57 to westbound SR-22 • Replacement of portions (or all) of several general-purpose lane connectors in the SR-22/I-405/I-605 interchange, the SR-22/I-405 interchange, and the I-5/SR-22/SR-57 interchange
HOV	• An assumed HOV occupancy requirement of three or more persons per vehicle by study planning year 2020* • An additional lane for HOVs on SR-22 in each direction from I-405 to approx. Glassell Street • An additional lane for HOVs on I-405 in each direction from I-605 to SR-22 • HOV direct connector ramps between: – Southbound I-605 to southbound I-405 – Northbound I-405 to northbound I-605 – Southbound I-405 to eastbound SR-22 – Westbound SR-22 to northbound I-405
Bus	• Faster express bus service through bus use of the proposed HOV lanes on SR-22 for routes from Tustin, Orange, Santa Ana, and Garden Grove to Long Beach

*Note: For study purposes, the HOV occupancy requirement is assumed to be applicable to all freeway HOV lanes in Orange County by Year 2020.

The planning horizon for the Reduced Build Alternative is 2020. For the purposes of the traffic analysis the HOV requirement was assumed to be three or more persons per vehicle (3+) in the Year 2020. This assumption is consistent with other future planning efforts and was based on the analysis of travel forecasts. It is predicted that Orange County's HOV lanes would be congested during peak periods in 2020 even with an average occupancy requirement of two or more persons per vehicle (2+). Consequently, travel demand forecasts conducted for the SR-22 (West Orange County Connection alternatives assume that the full Orange County HOV network would be operating under a 3+ occupancy requirement. It is important to note, however, that the policy decision to change the HOV vehicle occupancy requirement from 2+ to 3+ has not been made. The current vehicle occupancy requirement for HOV lanes in Orange County is 2+. For the Reduced Build Alternative, it is anticipated that HOV lanes on SR-22 would open and operate at a 2+ occupancy requirement until such time that a policy decision is made to change the HOV network from 2+ to 3+.

Figure 2.2-3
Reduced Build Alternative Route Map

Figure 2.2-4A
Reduced Build Alternative Route Map

Figure 2.2-4B
Reduced Build Alternative Route Map

2.3 ALTERNATIVES WITHDRAWN FROM FURTHER CONSIDERATION

As described in Section 2.1.2, a refined set of six conceptual alternatives was evaluated in detail as part of the MIS conducted for the SR-22/West Orange County Connection project. The MIS technical analysis is presented in the *MIS Evaluation Report*. The MIS technical evaluation, along with public input and policy considerations, provided the basis for the selection of the final set of transportation alternatives described in Section 2.2. Ultimately, the No Build Alternative, the TSM/Expanded Bus Service Alternative, and two variations of the HOV Lanes Full System Alternative, the Full Build and Reduced Build Alternatives, were carried forward for further study in the DEIR/EIS.

The alternatives that were withdrawn from further study upon completion of the MIS phase of the project are summarized in Sections 2.3.1 through 2.3.3, below. The detailed technical results, description of public involvement activities and findings, and summary of OCTA Board actions that led to the elimination of these conceptual alternatives are provided in the *MIS Evaluation Report*.

2.3.1 Refined Alternative 3: Fixed Guideway

A. DESCRIPTION

The Fixed Guideway Alternative would implement a new travel mode in the study area. The Fixed Guideway would link two existing systems extending from the Santa Ana Transportation Center/Metrolink station on the east to the Metropolitan Transportation Authority (MTA) Blue Line on the west. This alternative includes all elements of the No Build Alternative and the TSM/Expanded Bus Service Alternative, plus the following additional improvements:

Bus.

- Reduce the number of express buses from those provided in the TSM/Expanded Bus Service Alternative to lessen conflicts between express buses and the proposed Fixed Guideway
- Increase north/south service to act as feeder service to the Fixed Guideway
- Provide park-and-ride lots at the following locations for improved access/transfer to the Fixed Guideway:
  - Brookhurst Street at SR-22 (Garden Grove)
  - Seal Beach Boulevard at SR-22 (Seal Beach)

Fixed Guideway.

- The Fixed Guideway alignment running between the Los Angeles/Orange County line in Seal Beach and the Santa Ana Transportation Center following along SR-22, the Pacific Electric right-of-way, Santa Ana Boulevard, and Fourth Street through central Santa Ana
- Ten-minute headways in the peak periods and twenty-minute headways in the off-peak periods
- Fixed Guideway technology serving mainline east/west movements along SR-22 and the former Pacific Electric right-of-way; extended trip-making beyond the mainline requiring a transfer at each station
- Station locations at approximately 1.6- to 3.2-kilometer (one- to two-mile) intervals adjacent to major north/south arterial crossings
- Specific fixed guideway technology not determined; light-rail transit (LRT) assumed for purposes of travel forecasting and impact assessment

B. SUMMARY OF FINDING

Consistent with OCTA's decision in the MIS, the Fixed Guidway Alternative was eliminated from further consideration due to lack of public support in the SR-22 corridor study area; estimated capital and operating and maintenance costs; and lack of a direct rail/guideway system connection at the western terminus of the Fixed Guideway alignment (i.e., once the alignment reached the Los Angeles County/Orange County line). Moreover, the Fixed Guideway Alternative did not fulfill an important transportation goal for OCTA, which was to complete the last major link in the county's HOV network. SR-22 is one of the few remaining freeways in Orange County without HOV facilities.

2.3.2 Alternative 4: General-Purpose Lanes

A. DESCRIPTION

The General-Purpose Lanes Alternative addresses the transportation needs of the study area through expanding the capacity of the freeway by adding general-purpose lanes in each direction on SR-22 between Valley View Street and SR-55 and providing a new arterial along the former Pacific Electric right-of-way. Because this alternative is made up of two distinct components (the general-purpose lanes on SR-22 and the arterial), two sub-alternatives were defined and evaluated. Alternative 4A includes only the general-purpose lanes on SR-22 and Alternative 4B includes the general-purpose lanes on SR-22 and the arterial along the former Pacific Electric right-of-way.

Alternative 4A. This sub-alternative includes all elements of the No Build Alternative and the TSM/Expanded Bus Service Alternative, plus the following additional improvements:

Highway.

- An additional general-purpose lane on SR-22 in each direction from I-405 to SR-55

Alternative 4B. This sub-alternative includes all elements of the No Build Alternative and the TSM/Expanded Bus Service Alternative, plus the following additional improvements:

Highway.

- An additional general-purpose lane on SR-22 in each direction from I-405 to SR-55
- A general-purpose arterial constructed on the former Pacific Electric right-of-way south of SR-22 leading to central Santa Ana via Santa Ana Boulevard and Civic Center Drive
- Direct connector ramps between SR-22 and the former Pacific Electric right-of-way arterial

B. SUMMARY OF FINDING

From a purely technical perspective, the General-Purpose Lanes Alternative exhibited many of the mobility benefits of the other build alternatives considered, as well as similar environmental impacts depending upon the General-Purpose Lanes Alternative sub-alternative being considered, Alternative 4A or 4B. Alternative 4B showed greater environmental impacts compared to Alternative 4A, largely because of the proposed four-lane arterial in the former Pacific Electric right-of-way. Consistent with OCTA's decision in the MIS, the General-Purpose Lanes Alternative was eliminated from further consideration due to concerns with future air quality conformity; a desire to preserve the long-term operational flexibility of added lanes to SR-22; and the desire to meet an important transportation goal, completion of Orange County's HOV system. With the completion of Orange County's HOV system, mobility throughout other freeways linked to SR-22 would also be improved, thereby reducing the "bottleneck" effect throughout the region. The implementation of the General-Purpose Lanes Alternative will not efficiently address the increased travel times and long-term congestion issues predicted for SR-22. A lesser benefit for reducing congestion and improving air quality would be derived from the general-purpose lane alternatives than from an HOV alternative because the PM peak periods vehicle hours traveled (VHT) for the general-purpose lane would be greater than that for an HOV lane.

The SR-22 corridor is located in the South Coast Air Basin (SCAB) jurisdiction, currently classified as nonattainment for Carbon Monoxide (CO), Ozone (O3), and Particulate Matter greater than 10 microns (PM10), with respect to air quality compliance under the Federal and California Clean Air Acts. Federal Law [23 U.S.C section 134 (l)] prohibits funding for a significant increase in carrying-capacity for single-occupant vehicles (general-purpose lanes) for regions classified as nonattainment for CO and O3 (Sections 3.8 & 4.8 for further discussions on air quality).

2.3.3 Alternative 5: HOV Lanes on SR-22

A. DESCRIPTION

The HOV Lanes on SR-22 Alternative would add an HOV lane to SR-22 between Valley View Street and SR-55, as incorporated in the SCAG 1998 RTP. The HOV lane in each direction would end at the terminal freeway-to-freeway interchanges. This alternative includes all elements of the No Build Alternative and the TSM/Expanded Bus Service Alternative, plus the following additional improvements:

HOV.

- An HOV lane in each direction from I-405 (Valley View Street) to SR-55

Bus.

- Use of SR-22 HOV lanes by express buses, providing faster bus service

B. SUMMARY OF FINDING

This HOV Alternative performed well in the technical analysis conducted for the MIS as it maximized transportation benefits at the lowest cost compared to the other build alternatives. This alternative would complete the countywide HOV system, fulfilling an important transportation goal. Through surveys of the project area and countywide public opinion polls, participants voiced concerns about the safety and congestion impacts of vehicles moving between HOV and general-purpose lanes as they transition between freeways. Surveys indicated that the public generally believe direct carpool connectors between freeways improve safety and overall efficiency of the HOV system. Alternative 5 was viewed as less desirable by the public compared to the other HOV alternatives, because it lacked direct freeway-to-freeway HOV connectors, and was therefore, eliminated from further consideration.

2.4 STATUS OF OTHER PROJECTS AND PROPOSALS WITHIN THE AREA

Related projects are those that may affect the construction, operation, or use of the SR-22/West Orange County Connection, but are developed independently from it. They may also contribute to cumulative impacts when considered in conjunction with the SR-22/West Orange County Connection.

Related projects that have been identified for the SR-22/West Orange County Connection study area are presented below. Projects that are still in the planning process pending environmental approvals by the lead agencies are not listed. Only projects that have certified and adopted environmental documents are included. Examples of major projects in the SR-22 study area awaiting environmental approval are the Harbor Boulevard Smart Street Feasibility Study and The CenterLine Project.

2.4.1 Los Alamitos

- See Section 2.4.9, Regional Transportation Projects, of this report for a description of the Katella Avenue Super Street project.

2.4.2 Orange County (Rossmoor Community)

- Rossmoor Pump Station and Basin Modifications is located between I-605 and the San Gabriel River is a portion of Los Alamitos Channel known by the county as Rossmoor Retarding Basin. This project will build a new pump station to help regulate flows (Orange County, 1998).[5]

2.4.3 Seal Beach

- The proposed redevelopment of Bixby Old Ranch Towne Center in Seal Beach is adjacent to Seal Beach Boulevard between Saint Cloud Drive and Rossmoor Center Way. The project would dedicate the existing Bixby Old Ranch Tennis Club to the City of Seal Beach as a public recreation facility. It is anticipated to build a new hotel, restaurants, and senior care facilities, while improving the existing golf course (Seal Beach, 1998).
- Widening of the Seal Beach Boulevard overcrossing of I-405 is proposed to provide six through lanes (three in each direction), sidewalks, bike lanes, and a median. Roadway approaches would also be widened. Small amounts of additional right-of-way would be required for the widening (Seal Beach, 1998).[6]

2.4.4 Westminster

- No projects are proposed in the vicinity of SR-22.

2.4.5 Garden Grove

- County Wide Automotive Dealership, located on the corner of Trask Avenue and Taft Street, anticipates construction of an approximately 1.3-hectare (3.2-acre) site for the operation of an automobile sales, repair, and service facility (Garden Grove, December 199m9).[7]

2.4.6 Stanton

[5] The Negative Declaration for this project is available at County of Orange, Public Facilities and Resources Department, 300 N. Flower Street, Santa Ana, CA 92703.
[6] The EIR for the Bixby Old Ranch Towne Center and the Negative Declaration for the Seal Beach Boulevard overcrossing are available at the City of Seal Beach, 211 Eighth Street, Seal Beach, CA 90740.
[7] The Negative Declaration for this project is available at the City of Garden Grove, 11222 Acacia Parkway, Garden Grove, CA 92840.

- No projects are proposed in the vicinity of SR-22.

2.4.7 Santa Ana

- Fashion Square Commercial Center (now known as MainPlace Mall) is looking to complete the final phase of development which includes an office building on the northern end of the property and a department store expansion on the southern end (Santa Ana, 1983).
- Main Street Concourse, located at the northeast corner of Main Street and Owens Drive, is a proposed 7.6-hectare (18.9-acre) development, which includes the construction of commercial, office, retail, hotel, entertainment, and residential land uses (Santa Ana, 1992).
- Bristol Street Widening entails upgrading a 6.3-meter (3.9-mile) section of Bristol Street to six lanes. The project extends from Memory Lane to Warner Avenue (Santa Ana, 1990).[8]

2.4.8 Orange

- Main Street/La Veta Avenue/Chapman Avenue. Phases of this project have been completed. The unfinished phases include widening La Veta Avenue between Cambridge Street and Flower Street to and ultimate right-of-way of 25 meters (80 feet) and between Pixley Street and Flower Street to a range of 30 to 40 meters (100 to 135 feet) (Orange, 1991).[9]

2.4.9 Tustin

- No projects are proposed in the vicinity of SR-22.

2.4.10 Regional Transportation Projects

- Katella Avenue Super Street improvements are proposed for a 23.0-kilometer (14.3-mile) segment of Katella Avenue between I-605 and SR-55. Measures that will be implemented include traffic signal coordination, roadway widening, intersection improvements, on-street parking modification, restriping, bus turnouts, and upgrading the safety and efficiency of the roadway (OCTA, 1993).[10]
- I-5 widening extending from SR-22 to SR-91, approximately 13.0 kilometers (8.1 miles), will reduce traffic congestion, provide additional capacity for the anticipated traffic increase, and reduce operational problems (Caltrans, 1991).[11]

2.5 PROJECT FUNDING

Estimated capital costs of the proposed improvement alternatives range from $68 million to approximately $763 million. Specific funding plans will be determined based upon the selected alternative and availability of a range of funding sources.

If selected, the funding of a recommended build alternative by OCTA and Caltrans would likely require several sources of funds. The actual funding plan for a recommended build alternative will be developed by Caltrans and OCTA during this next phase of project development. Potential funding sources for improvements in the SR-22 corridor could include:

- Measure M funds
- State transportation funds
- Federal transportation funds
- Transportation Congestion Relief Plan (TCRP) funds
- Local transportation funds

[8] The EIR for these projects are available at the city of Santa Ana, 20 Civic Center Plaza, Santa Ana, CA 92702.
[9] The Memorandum of Understanding for this project is available at OCTA.
[10] The EIR for this project is available at OCTA.
[11] The EIR for this project is available at Caltrans, District 12.

Measure M does not currently include improvements to SR-22 as a part of the committed freeway improvements in the measure. However, OCTA has continued to experience cost savings on committed freeway construction projects to date and Measure M sales tax revenues higher than OCTA's conservative financial projections. These two factors combine to offer potential availability of additional Measure M funds beyond those required to complete committed freeway improvements. With approval of both the Measure M Citizens Oversight Committee and the OCTA Board of Directors, these additional funds could be programmed to finance improvements along SR-22. The magnitude of these additional funds will be determined as part of the future funding plan for the selected build alternative.

State and federal transportation funding allocations are based upon the State Transportation Improvement Program (STIP). The STIP underwent a major change due to the approval in 1999 of Senate Bill 45. This bill consolidated various funding programs into the STIP and created more accountability for programming and delivery of STIP projects to the regions around the state and the various Caltrans districts. Of the available STIP funds, 75 percent are allocated by formula to the counties and are referred to as the RTIP. The remaining 25 percent is allocated by the California Transportation Commission (CTC) and Caltrans through the Interregional Transportation Improvement Program. The 1998 STIP covers a six-year time period, with future STIPs reduced to four-year periods. The 1998 STIP,[12] adopted in June 1998, includes over $300 million in funding for transportation improvements in Orange County. Most of these funded projects are included in the Measure M program of projects.

On July 6, 2000, Governor Gray Davis signed Assembly Bill (AB) 2928, a transportation funding measure called the California Transportation Congestion Relief Plan (TCRP). Among other improvements, the TCRP provides $206.5 million for SR-22 HOV lanes. If either the Full Build or Reduced Build Alternative is selected through the environmental review process, this amount would fund the majority of the project costs for the SR-22 portion of the project.

2.6 PROJECT PHASING

Regardless of which alternative is ultimately selected for implementation, it is likely that the project construction would be phased. Phasing scenarios have not been determined, and will be dependent on such factors as funding availability, environmental impacts and mitigation requirements, coordination with other projects, and operational considerations of the transportation system during both construction and operation.

The preferred alternative for the proposed project would be identified prior to the completion of the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS). The identification process for the preferred alternative would be based on comments received from agencies and interested parties during the public circulation of the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS). Caltrans, FHWA, and OCTA would be the agencies responsible for the identification of the preferred alternative. The preferred alternative would be discussed in the FEIR/EIS.

[12] Available at OCTA.

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